

Fig 1. (PRIOR ART)

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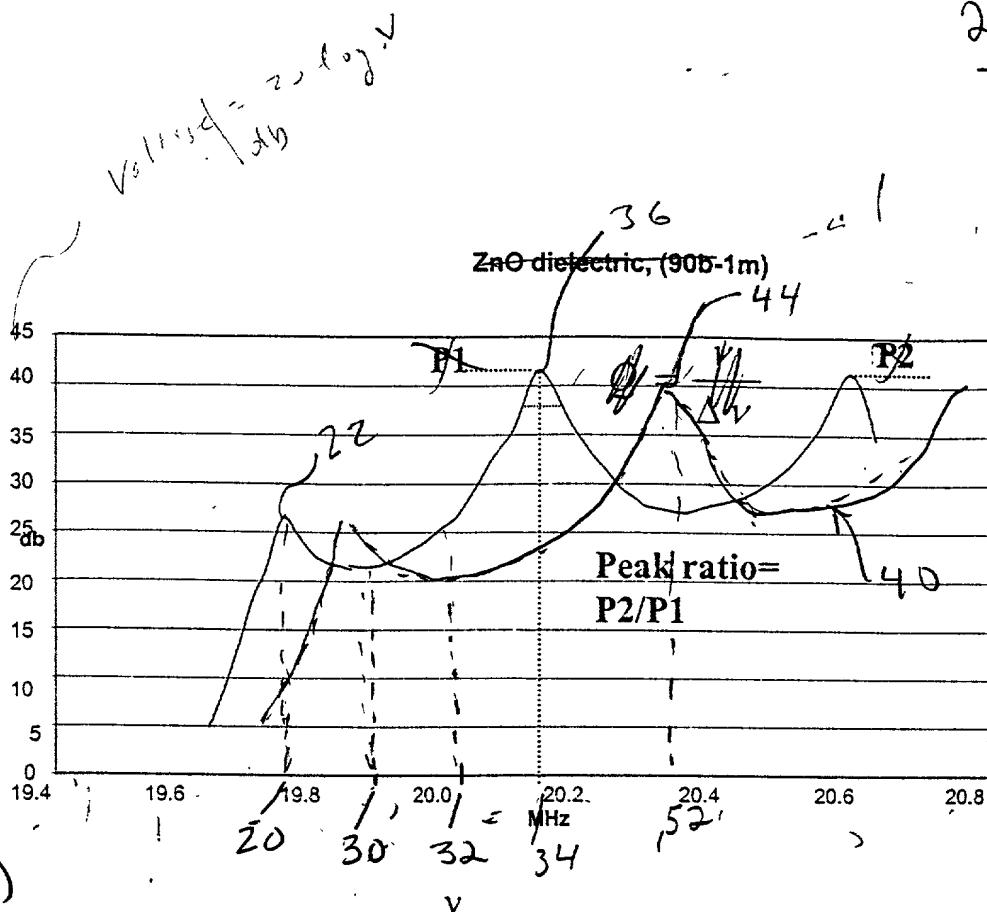


Fig 2
 (PRIOR ART)

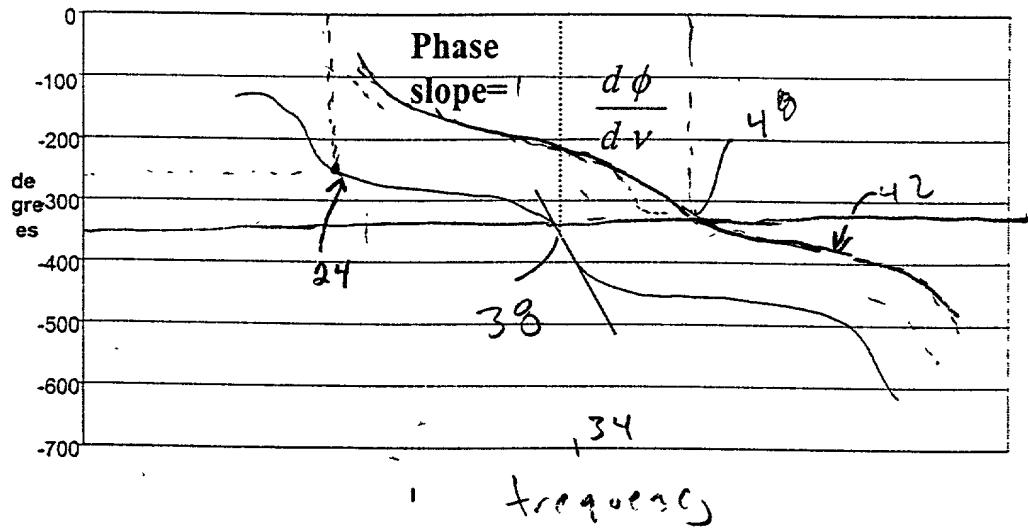


Fig 3
 (PRIOR ART)

Figure 1: Transmitted magnitude and phase response of an FPW sensor

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$$f(x) = A \cos \omega t$$

$$f(\theta) = A \cos \theta$$

if $\cos \theta$ wave form

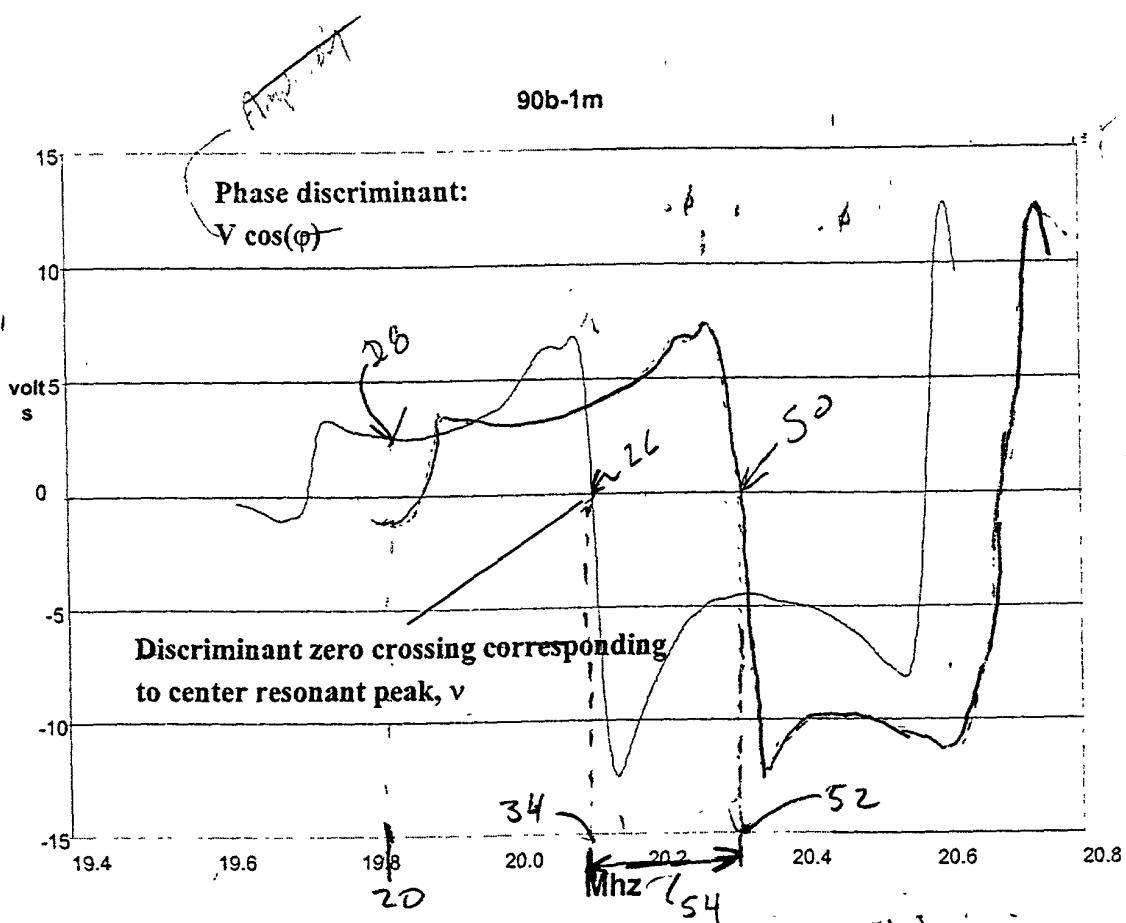


Figure 3. Derived sensor response used in the phase-locked oscillator readout circuit

FS ~~4~~ (PRIM ART)

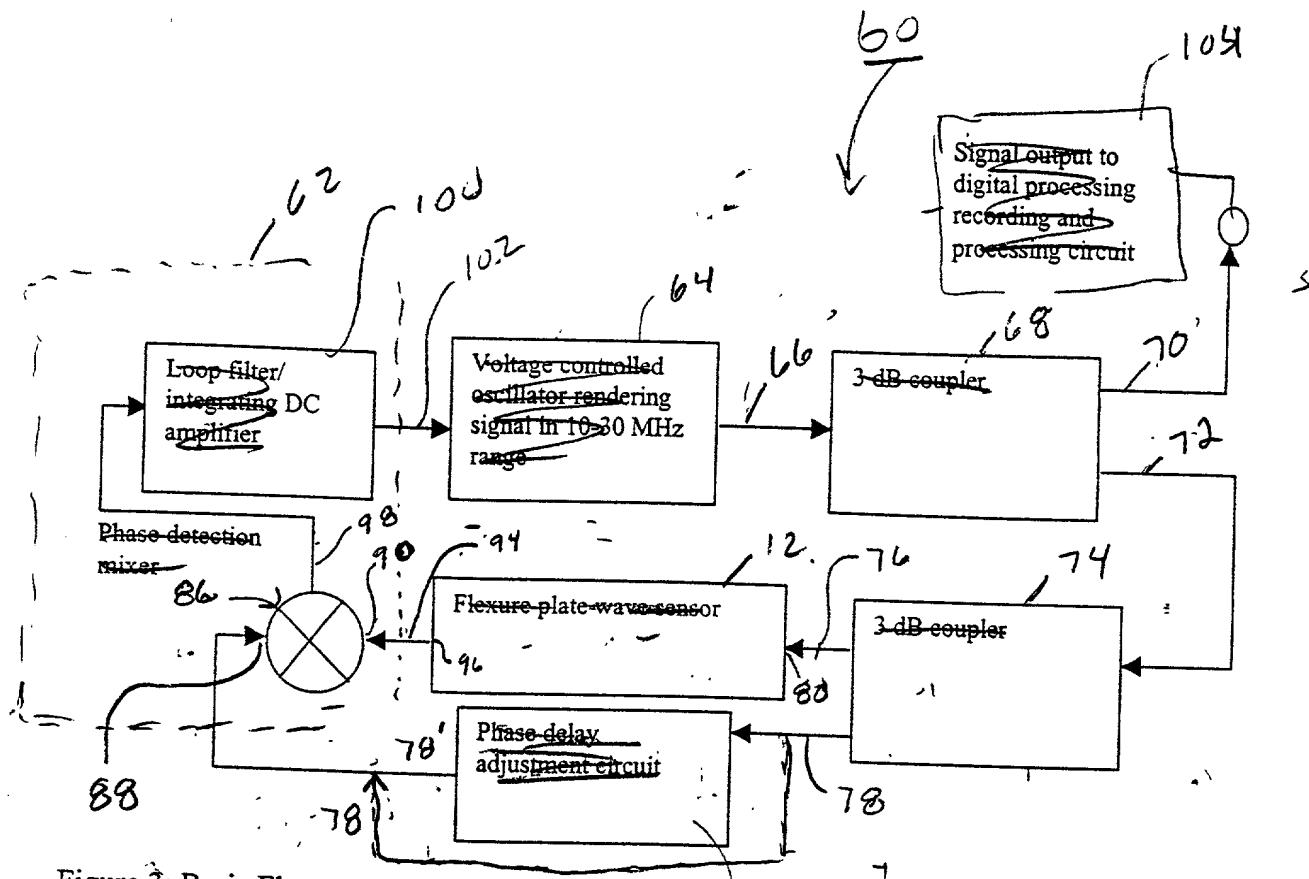


Figure 3: Basic Flexure Plate Wave resonator readout circuit with frequency signal output

Fig 5

Chem Sensor/ PLL Oscillator- Board 2

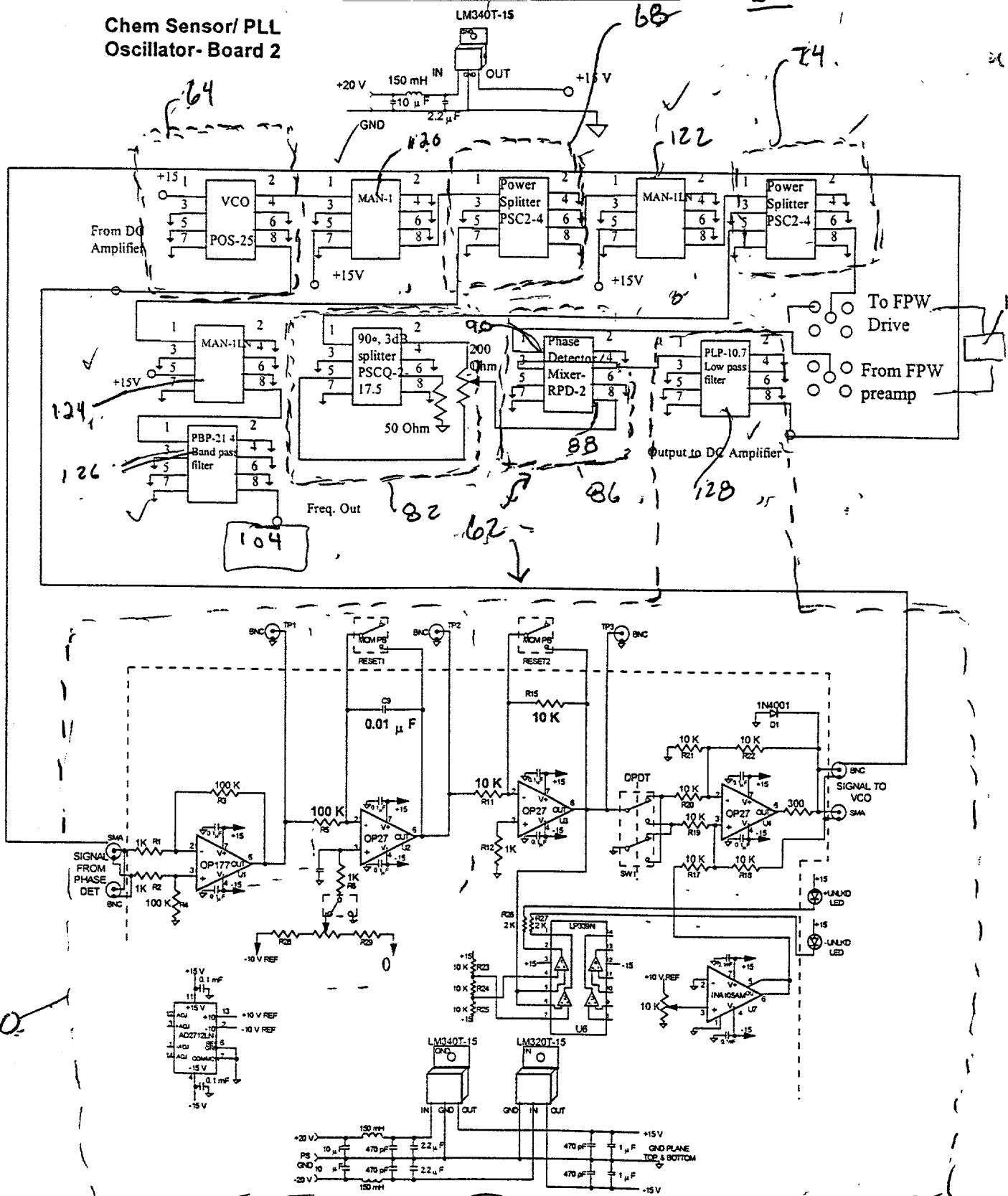


Figure A-1: Phase locked oscillator circuit applied to reading out silicon FPW

Fig 6.

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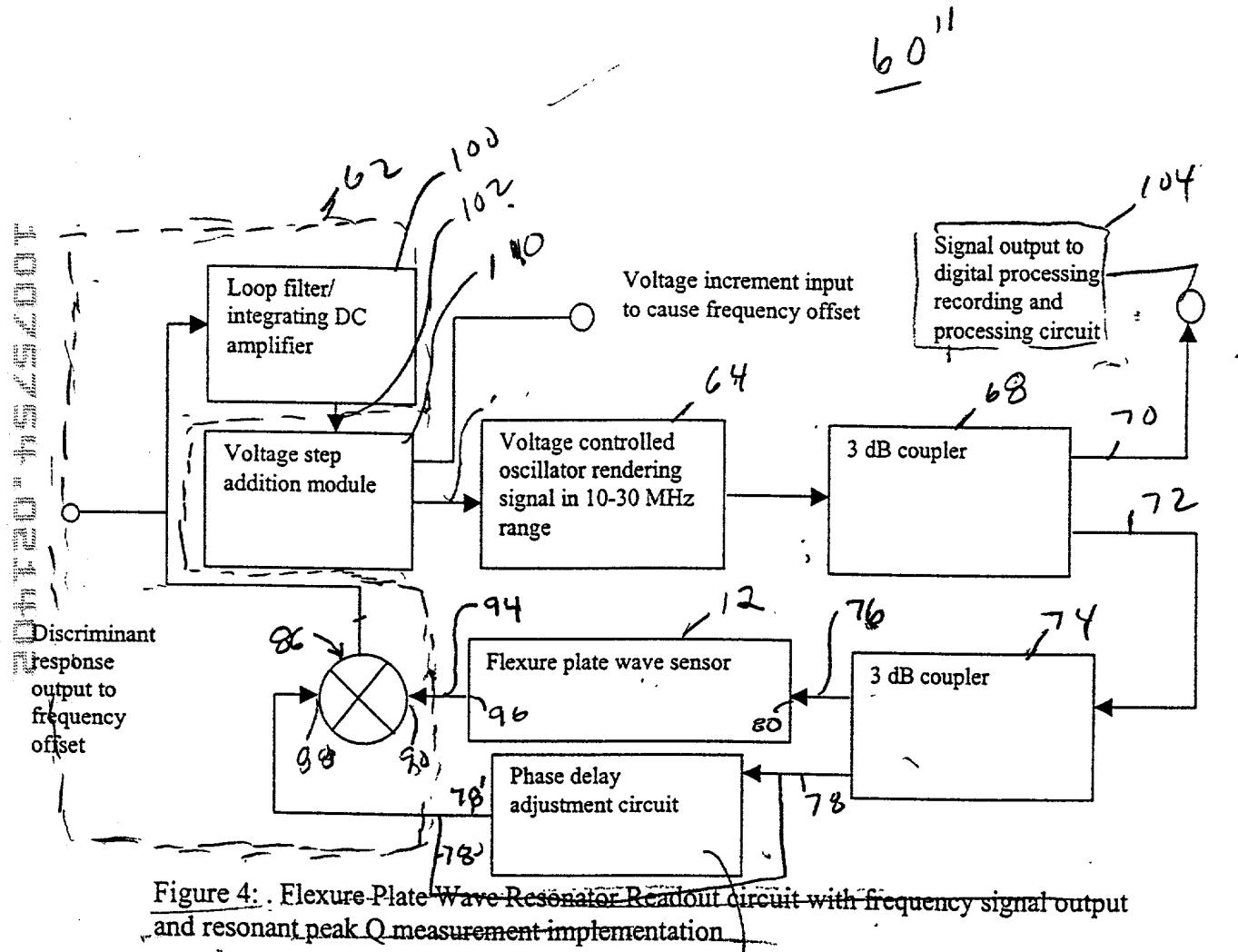


Figure 4: Flexure Plate Wave Resonator Readout circuit with frequency signal output and resonant peak Q measurement implementation

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Detected the phase difference
between an output signal at a sensor
and the input signal to a sensor

- 200

Maintaining a fixed phase difference between
the output signal and the input signal

- 20°

Adjusting the phase difference between
the output signal and the input signal
to a predetermined fixed phase
difference.

- 20

Fig. 8